

Amendments to the Drawings:

The attached two sheets of drawings 2/12 and 3/12 include changes to Figs. 2 and 3. These sheets replace the corresponding original sheets 2/12 and 3/12. In Figs. 2 and 3, reference numerals 68 has been added to identify journal boxes.

Attachment: Replacement Sheet

REMARKS / ARGUMENTS

In the specification, the amendments made on pages 1 and 14 adopt the suggestions made by the examiner.

The amendments made on page 10 are partially in response to the examiner's objection that the drawings fail to show the journal boxes described in the specification on page 10, lines 7-9. In this regard, the numeral "68" has been added following the first reference to "journal boxes". Otherwise, the amendments made on page 10 are in response to the examiner's objection that the "means for adjusting the elevation" recited in claim 8 has no antecedent. The language now used in the description conforms more closely to that used in claim 8.

In amended Figure 2, journal boxes are identified by added numerals 68. In amended Figure 3, a thickened area around axle 111, likewise identified by numeral 68, has been added to representationally illustrate a journal box. This is responsive to the examiner's objection to the drawings under 37 CFR 1.83(a). It is noted that the examiner also objected to Figure 1 in that it does not show journal boxes. However, by the nature of Figure 1, they are substantially hidden from view. It is also noted that journal boxes for axles are conventional features. As such, it is respectfully submitted that their detailed illustration is not essential for a proper understanding of the invention.

With regard to the claims, the examiner has acknowledged that claims 16-18 are directed to allowable subject matter. They remain in their original form. As well, claims 6-10, 13, 24, 26 and 29 remain in their original form. Claims 2, 14-15 and 20 have been canceled. Claims 1, 3, 4, 5, 11, 12, 19, 21, 22, 23, 25 and 27 have been amended.

The purpose of the amendments to the claims may be generally summarized as follows:

| Claim | Purpose of Amendment |
|--------------|---|
| 1 | To incorporate suggestions made by the examiner on page 4 of the Office Action and to address substantive issues relating to the cited prior art. |

| Claim | Purpose of Amendment |
|--------------|--|
| 3 | To change the claim dependency in view of the cancellation of claim 2 and to incorporate the suggestion made by the examiner on page 4 of the Office Action. |
| 4 | To change the claim dependency in view of the cancellation of claim 2. |
| 5 | To incorporate the suggestion made by the examiner on page 4 of the Office Action. |
| 11 | To change the claim dependency in view of the cancellation of claim 2. |
| 12 | To incorporate suggestions made by the examiner on page 4 of the Office Action and to address substantive issues relating to the cited prior art. |
| 19 | To incorporate suggestions made by the examiner on page 4 of the Office Action; also see below |
| 21 | To change the claim dependency in view of the cancellation of claim 20. |
| 22 | To address substantive issues relating to the cited prior art. |
| 23 | To incorporate the suggestion made by the examiner on page 4 of the Office Action. |
| 25 | To incorporate the suggestion made by the examiner on page 4 of the Office Action. |
| 27 | To change the claim dependency in view of the cancellation of claim 20. |

More particularly, the claim amendments which are considered to be most substantive are to merge the limitations in original claim 2 with original claim 1, to merge the limitations in original claim 14 with original claim 12, to merge the limitations in original claim 20 with claim 19, and to rewrite original claim 22 in independent form with the limitations of original claim 19.

(1) Claims 19, 21, 27/19, 27/21 and 28 as now presented

With regard to the merger of the limitations in original claim 20 with claim 19, the examiner indicated that original claims 20-21 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In effect, it is respectfully submitted that amended claim 19 includes the base claim and all such limitations. Accordingly, it is respectfully submitted that amended claim 19 should be considered allowable.

Likewise, it is respectfully submitted that claims 21, 27/19, 27/21 and 28, all of which depend directly or indirectly from claim 19 should be considered allowable.

(2) Claims 1, 12 and 22, and amended claims dependent thereon as now presented

With regard to the merger of limitations in original claim 2 with original claim 1, the merger of limitations in original claim 14 with original claim 12, and the rewriting of original claim 22 in independent form with the limitations of original claim 19, the effect is to maintain that claims 1, 12 and 22 and claims dependent thereon are patentable notwithstanding Japanese Patent 58-104,370 in view of Frey.

Claims 1, 12 and 22 each specify, *inter alia*, relatively narrow, flexible elongated blades arranged in circumferentially spaced rows extending along a rotor, the blades in each of the rows being distanced from each other in succession by a space. It is respectfully submitted that neither the Japanese Patent nor Frey teach or suggest such features.

The blades shown in the Japanese Patent are merely conventional water or paddle wheel blades which extend parallel to the rotor axis and which individually and collectively differ substantially from the blades of the present invention.

With regard to Frey, the examiner's characterization is as follows:

Frey shows a rotary turbine 10 having blades 12 that are relatively narrow, flexible, elongated blades and are arranged in circumferentially spaced rows extending along a rotor 11, with the blades in each row being distanced from each other in succession by a space, for the providing high mechanical efficiency, and lower weight for a given output, when generating rotary power from the energy in a stream of fluid. (emphasis added)

The applicant respectfully disagrees with such characterization. Frey does not teach the use of "blades". Indeed, it is submitted that Frey teaches away from the use of blades.

More particularly, in Frey's description of the prior art, he makes reference to "standard turbines" having "blades" (Col. 1, lines 32-35). Then, in the description of his own invention, Frey teaches the use of a plurality of "densely populated wires" extending outwardly from a hub

(Col. 1, lines 32-35). He does not characterize the “wires” as “blades”, and clearly means to distinguish “wires” from “blades”. Further, it is noted that there is no indication in Frey that the “wires” should have “flexibility”. Indeed, the contrary may be indicated when Frey suggests that the wires may be reinforced by corkscrewing or the like (Col. 2, lines 26.27).

Both the present invention and that disclosed in the Japanese Patent utilize “blades” (not wires).

In contrast to the present invention and in contrast to the Japanese Patent, Frey is not concerned with generating power from a water current in a body of water. He is concerned with compressible fluid flow, and he teaches the need for a fluid “jet” positioned to direct a fluid such as compressed air into his wires (see e.g. Col. 1, lines 54-57). Frey mentions the use of compressed air to achieve rotor speeds of 1800 rpm with a wheel 12 inches in diameter and 2 feet in length (Col. 2, lines 32-33). He also contemplates the use of his turbine on the exhaust of an internal combustion engine (Col. 2, lines 46-51). But, he clearly does not contemplate motive force from a current in a body of water. Thus, the working environment of Frey’s invention is entirely different from that of the present invention and from that disclosed in the Japanese Patent. Frey is addressing a problem which differs substantially from that addressed by the present invention or that disclosed in the Japanese Patent. Frey does not suggest the use of an incompressible fluid such as water.

In the circumstances, it is respectfully submitted that a person having ordinary skill in the art who was concerned with the generation of power from a water current in a body of water would not look to Frey for any guidance. There is no motivation to do so. For this reason alone it is respectfully submitted that claim rejections based on the Japanese Patent in view of Frey should be withdrawn.

In addition, it is respectfully submitted that if a person of ordinary skill was somehow motivated to combine the teaches of Frey with those of the Japanese Patent, then the result would be entirely speculative and problematic. Frey contains no suggestion that his invention

would work in the manner of the present invention if the structure disclosed in the Japanese Patent was somehow modified to use “densely populated wires” instead of blades or paddles.

More particularly, the manner in which the flexible blades of the present invention work is described on page 5 of the specification as follows:

“...The blades engage and slow the flow of water, the slowing effect being greater closer to the turbine axis. The result is a water current along the length of the blades. The blades are bent forwardly by the pressure on the blades leading to a degree of equalization of water flow over the blades and around the blades. The flow generates a whirling effect which contributes to the flow of water along the blades and, combined with the slowing effect described above, facilitates an increased power output. The power generated increases with the depth of the driving water flow.”

(see also page 10, line 23 to page 11, line 8.)

Such characteristics and effects are achieved with the use of flexible blades structured and arranged in the manner specified in the claims, and there is no suggestion in Frey that the same or similar results would be achieved with the use of wires instead of blades. While wires might to some degree resist and react to the flow of water, they would not capture and direct the flow in the manner of a blade’s surface or in the manner of a blade’s edges between which the surface extends. The geometry of a wire differs substantially from that of a blade, and it is respectfully submitted that the dynamics of fluid flow over and around a wire necessarily will differ substantially from that over and around a blade.

Accordingly, it is respectfully submitted that the claim rejections based upon Japanese Patent 58-104,370 in view of Frey should be withdrawn, and that amended Claims 1, 12 and 22 should be considered allowable. Likewise, since they all depend from base claims which should be considered allowable, it is respectfully submitted that claims 3-11 (which depend directly or indirectly from claim 1), claim 13 (which depends from claim 12), and claims 23-26 and 27/22 to 27/26 (which depend directly or indirectly from claim 22) should be considered allowable.

In view of the foregoing amendments and submissions, favorable consideration is respectfully solicited.

Appln. No. 10/615,451
Reply to Office action of April 5, 2005

DEPOSIT ACCOUNT

Enclosed is a check in the amount of \$610.00 (\$100.00 for the small entity fee for the presentation of one more independent claim for a total of four, as compared to the three with which the application was originally filed + \$510.00 for the small entity fee for the 3-month extension of time to extend the term up to and including October 5, 2005). Accordingly, although it is believed that no fee is due at this time, the Commissioner is authorized to charge any deficiencies associated with this Communication, or to deposit any overpayments, to **Deposit Account No. 13-4365.**

Respectfully submitted,
MOORE & VAN ALLEN PLLC

Date: October 3, 2005

By: _____



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Encls.: \$610.00 check
Petition for 3-month extension of time up to and including October 5, 2005